CURRENT MARKET SITUATION ON AIRCRAFT ENGINES AND INCREASING REQUIREMENTS OF EB-PVD EQUIPMENT

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Equipment suppliers use forecast, demands and estimates to determine capacity requirements for coated parts and also coating development.

Fuel efficiencies and longer cycle times of all modern gas turbines, especially for the aviation industry, are the key drivers for the optimization of materials and coatings. In particular EB-PVD coatings designed specifically to accomplish those efficiencies.

Ytrria stabilized zirconia coatings applied by EB-PVD achieved standard for the industry over the last decade. In order to produce these coatings in reliable and cost efficient methods, coating equipment design for high throughput and extended campaign times of several days is required.
The challenge for an equipment supplier is to continue to provide equipment and process improvements, realizing, that some of these may require extensive requalification of equipment and process by aviation authorities (e.g. FAA). The equipment and process improvements all take in consideration the safety features for personnel and machinery protection.

As an example of process improvements which also drive equipment design is the application of double layers coatings, which have become a new standard today.
Double layer coatings can be applied sequentially depending on equipment configuration. Today integrated solutions that allow for switching evaporation materials during a deposition run are required. In order to accomplish this several systems are integrated in order to provide a sophisticated and safe beam deflection system with a high flexibility of beam pattern control.